

ABSTRACT OF THE DISCLOSURE

Particle binding compositions useful for stabilizing soil and other particles comprise water, an endosperm, an iron compound, a strong base, and a pH adjustor. The endosperm comprises the carbohydrate and protein portions of grains, seeds, or tubers. The strong base is reacted with the endosperm in the presence of water added in order to ionize the carbohydrate and protein of the endosperm and render them more soluble or dispersible in water. The iron compound promotes an electrochemical reaction that assists in the formation of a silicate crystal matrix when applied to soil. The pH adjustor lowers the pH of the composition, which improves handling ability and renders the composition more compatible with soil. Optional components such as fibrous materials and/or seeds can be added to promote vegetation or revegetation of denuded soils.

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